

Translation of Reference 4

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[0003]

[Problem To Be Solved by the Invention] However, in conventional mobile terminal systems in which a collection and distribution apparatus forcefully transmits operation programs to mobile terminal apparatuses, the user have to receive all the operation programs, following a regular procedure, even when only a part of the operation programs is needed.

[0004] On the other hand, even when the operation programs are partly updated, a new operation program is added, or the former operation program becomes unnecessary, the user have to receive all the operation programs, following the regular procedure.

[0005] The present invention has been made to solve the above problem in the conventional art. The object of the present invention is to provide a mobile terminal system, in which all the operation programs are not supplied when business programs to operate the mobile terminal are supplied, but the mobile terminal is supplied with only an updated operation program, a newly added operation program, and an operation program which was formerly used and has become unnecessary, without the user's operation.

[0008] [Operation of the Invention] According to the present invention having the above means, when the determination means determines that a program identification number stored in the second storage means does not match the corresponding program identification number among the program identification numbers received by the receiving means, the collection and distribution apparatus takes the operation program of the program identification number out of the first storage means, and transmits the operation program to the mobile terminal apparatus. When the determination means determines that a program identification number received by the receiving means does

not corresponds to any of the program identification numbers in the second storage means, the collection and distribution apparatus erases the operation program corresponding to the program identification number in the mobile terminal apparatus. [0009] Further, according to the present invention, when the determination means determines that a program identification number among the program identification numbers received by the receiving means matches the program identification number in the second storage means, and an program update number of the program identification number does not match the program update number thereof in the second storage means, the collection and distribution apparatus takes out the operation program of the program identification number out of the first storage means, and transmits the operation program to the mobile terminal apparatus.

[0010]

[Embodiment(s)] FIG. 1 illustrates a schematic block diagram of an embodiment of the present invention. In FIG. 1, reference numeral 10 denotes a collection and distribution apparatus, and reference numeral 20 denotes a mobile terminal apparatus. Reference numerals 11 to 15 denote constituent elements included in the collection and distribution apparatus 10. Reference numeral 11 denotes a central processing unit (CPU) to control the whole collection and distribution apparatus and process collection data and distribution data. Reference numeral 12 denotes a communication section, which receives collection data from the mobile terminal apparatus and transmits distribution data to the mobile terminal apparatus. Reference numeral 13 denotes a program storing section which holds programs to be operated, and reference numeral 14 denotes a program identification number and version storing section which holds identification numbers and versions of the programs to be operated. Reference numeral 15 denotes a version determination section which determines operation programs, master data, and messages to be updated. Reference numerals 21 to 25 denote constituent elements included in the mobile terminal 20. Reference numeral 21 denotes a central processing unit (CPU) to control the whole mobile terminal and process collection data and distribution data. Reference numeral 22 denotes a communication section, which receives distribution data from the collection and distribution apparatus and transmits collection data to the collection and distribution apparatus. Reference numeral 23 denotes a program storing section which holds programs, and reference numeral 24 denotes a program identification number and version storing section which holds identification numbers and versions of the programs. FIG. 2 illustrates contents of data to transmit identification numbers and versions of programs. A pair of a program identification number and a program version for one program serves as one record, and records of a number corresponding to the number of programs are transmitted.

[0011] Next, operation of the above embodiment is explained. In FIG. 3, the mobile terminal apparatus 20 is connected to the collection and distribution apparatus 10, and communication is started (Step 71). First, the CPU 21 loads the identification numbers of the operation programs, which are currently held in the mobile terminal apparatus 20, and the versions of the identification numbers from the program identification number and version storing section 24. Next, the CPU 21 transmits the identification numbers and the versions of all the programs held in the mobile terminal apparatus 20 to the communication section 22, in conformity with the transmission data format 80. The communication section 22 transmits the identification numbers and the versions of the operation programs to the collection and distribution apparatus 10. The communication section 12 receives the identification numbers and the versions of the operation programs held in the mobile terminal apparatus 20 from the communication section 22, and transmits them to the CPU 11. The CPU 11 transmits the received identification numbers and the versions of the operation programs to the version determination section 15 (Step 72). Next, the CPU 11 loads identification numbers and versions of operation programs to be operated from the program identification number and version storing section 14, and transmits them to the version determination section 15 (Step 73). The version determination section 15 compares the identification numbers and the versions of the operation programs held in the mobile terminal apparatus 20, which are transmitted from the CPU 11, with the identification numbers and the versions of the operation programs to be operated. Thereby, the version determination section 15 determines items to be updated, items to be added, and items to be erased (Step 74). The items to be updated indicate programs, each of which has an identification number common to the mobile terminal apparatus 20 and the collection and distribution apparatus 10, and different versions between the mobile terminal apparatus 20 and the collection and distribution apparatus 10. The items to be added indicate programs whose identification numbers do not exist in the mobile terminal apparatus 20. The items to be erased indicate programs whose identification numbers do not exist in the collection and distribution apparatus 10, although they exist in the mobile terminal apparatus 20. Then, the version determination section 15 transmits the items to be updated, the items to be added, and the items to be erased to the CPU 11 (Step 75). When there are items to be updated, items to be added, and/or items to be erased, the CPU 11 loads the operation programs of the items to be updated, the items to be added, and/or the items to be erased, and identification numbers and versions thereof from the program storing section 13 and the program version storing section 14, and transmits them to the communication section 12. In this step, if there are no items to be updated, items to be added, or items to be erased, the CPU 11 transmits distribution end information to

the communication section 12.

[0012] Further, if there are any items to be erased, the identification number and version (version 0) of the program to be erased are transmitted as contents of the record of the item to be erased in the program identification number and version transmission record 80 of FIG. 2, and thereby the mobile terminal 20 is notified of the program to be erased.

[0013] Next, the communication section 12 distributes the distribution end information transmitted from the CPU 11, and the operation programs and identification numbers and versions of the items to be updated, added and/or erased to the communication section 22 of the mobile terminal 20 (Step 76). The communication section 22 transmits the distribution end information, and the operation programs and identification numbers and versions of the items to be updated, added and/or erased to the CPU 21.

[0014] Thereafter, if there are items to be updated, added and/or erased, the CPU 21 stores the operation programs of the distributed items to be updated, added, and/or erased in the program storing section 23, and stores the identification numbers and the versions thereof in the program identification number and version storing section 24 (Step 77). In this step, if the program identification and version transmission record 80 includes a record of version 0, the identification number of the program in the record of version 0 indicates the identification number of an operation program to be erased. Therefore, the CPU 21 erases the operation program to be erased from the program storing section 23, and erases the identification number and the version of the operation program to be erased from the program identification number and version storing section 24. Lastly, the communication is ended, and then the mobile terminal apparatus 20 is disconnected from the collection and distribution apparatus 10 (Step 78).

[0015] As is clear from the embodiment described above, information is automatically distributed with respect to operation programs to be updated, added, and/or erased, and thus erroneous distribution due to the user's error in procedures is prevented.

[0016] In the above embodiment, although the version determination section 15 in the collection and distribution apparatus 10 determines whether collection of operation data is ended and whether operation programs to operate the mobile terminal are to be distributed or not, the mobile terminal 20 may perform these determinations.

[0017] Further, although the above embodiment explains operation with respect to operation programs, the present invention produces the same effect also with respect to master data, which are basic data concerning charge or the like, and messages.